

Claims

What is claimed is:

1. An apparatus for use in fluid agitation comprising
a drive shaft having a first end and a second end wherein the first end is coupled
to a selectively rotatable power source;
a first propeller coupled to the drive shaft; and
a submergible vortex control plate disposed above the first propeller.
2. The apparatus of claim 1, wherein the vortex control plate has a plurality
of holes therein.
3. The apparatus of claim 2, wherein the vortex control plate comprises a
grill.
4. The apparatus of claim 1, further comprising a forced air source
configured to deliver forced air proximate the first propeller.
5. The apparatus of claim 4, wherein the drive shaft is a tubular drive shaft
and wherein the forced air source is in fluid communication with the drive shaft.
6. The apparatus of claim 1, further comprising a second propeller disposed
on the drive shaft.

7. The apparatus of claim 6, wherein the first propeller is larger than the second propeller.
8. The apparatus of claim 6, wherein the first propeller is mounted between the second propeller and the power source.
9. The apparatus of claim 1, further comprising
a frame having mounting brackets for mounting the power source; and
a plurality of floats mounted to the frame.
10. The apparatus of claim 9, wherein the frame levels with respect to a water surface during operation.
11. The apparatus of claim 1, further comprising an atomizer comprising a plurality of blades disposed at the second end of the drive shaft.
12. The apparatus of claim 11, wherein the plurality of blades are substantially flat.
13. The apparatus of claim 11, wherein the plurality of blades are curved.
14. The apparatus of claim 11, wherein the drive shaft is a tubular drive shaft having a lumen therethrough having an open end proximate the second end of the drive shaft, wherein the plurality of blades extend over the open end of the lumen.

15. The apparatus of claim 11, wherein the plurality of blades extend radially outward.

16. The apparatus of claim 15, wherein a radial extent of the second propeller is greater than a radial extent of the plurality of blades of the atomizer.

17. The apparatus of claim 1, wherein the power source is configured to rotate the drive shaft at between 700 and 1000 RPM.

18. The apparatus of claim 17, wherein the power source is configured to rotate the drive shaft at between 700 and 800 RPM.

19. The apparatus of claim 17, wherein the power source is configured to rotate the drive shaft at between 750 and 950 RPM.

20. The apparatus of claim 4, wherein the forced air source is adjustable to control the amount of forced air delivered.

21. The apparatus of claim 4, wherein the forced air source is selectively operable independently of the power source.

22. An apparatus for use in fluid agitation comprising:
a tubular drive shaft having a first end and a second end wherein the first is coupled to a selectively rotatable power source;
a forced air source fluidly connected to the drive shaft
a first propeller coupled to the drive shaft;
a second propeller coupled to the drive shaft; and
an aspirator disposed at an end of the drive shaft;
wherein the power source is configured to operate between 700 and 1000 RPM.

23. The apparatus of claim 22, wherein the first propeller is sized to create an optimal fluid flow at between 700 and 1000 RPM.

24. The apparatus of claim 22, wherein the motor is an electric 8 pole motor designed to run at 900 RPM at 60 Hz.

25. The apparatus of claim 22, further comprising a submergible vortex shield disposed over the first propeller.

26. The apparatus of claim 25, wherein the vortex shield is substantially flat.

27. The apparatus of claim 25, wherein the vortex shield is curved.

28. The apparatus of claim 25, wherein the vortex shield comprises a surface having a plurality of holes therein.

29. A method of agitating a fluid, comprising:
providing a fluid agitator having a drive shaft having a first end coupled to a selectively rotatable power source and a first propeller, a second propeller, and an atomizer coupled to the drive shaft;
immersing the first propeller in the fluid; and
operating the power source at a selected speed between 700 and 1000 RPM.

30. The method of claim 29, wherein the step of providing a fluid agitator further comprises the steps of providing a drive shaft having a lumen and an open end and providing a forced air source fluidly connected to the drive shaft.

31. The method of claim 29, wherein the operation of the atomizer creates a vacuum at the open end of the drive shaft, and wherein the forced air source provides air into the drive shaft lumen at substantially the same rate as the vacuum can remove air from the drive shaft lumen.

32. The method of claim 29, wherein the first propeller provides an optimal level of fluid flow at the selected speed.

33. The method of claim 32, wherein the first propeller has a diameter of between 16 and 20 inches.